

Appl. No. : 10/716,910
Filed : November 19, 2003

COMMENTS

Claims 1, 3-9, and 11-18 are now pending in the present application, Claims 2 and 10 having been canceled without prejudice or disclaimer, Claims 1, 3, 9, 11, and 16 having been amended, and new Claim 18 having been added. The claims set forth above include markings to show the changes made by way of the present amendment, deletions being in ~~strikeout~~ and additions being underlined.

In response to the Office Action mailed April 18, 2005 Applicant respectfully requests the Examiner to reconsider the above-captioned application in view of the foregoing amendments and the following comments.

Amendments To Specification Address Noted Informalities

The foregoing amendments to the specification correct the informalities noted by the Examiner. The amendments do not add new matter and overcome the Examiner's objection. Entry of the amendments is respectfully requested.

Buckland et al. Does Not Anticipate Claims 1, 2, 7-10, or 14-17

Claims 1, 2, 7-10, and 14-17 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,349,700 issued to Buckland et al. Applicant respectfully traverses the present rejection. However, in order to expedite prosecution of the present application, Applicant has amended Claim 1 to include the subject matter of Claim 2 (now canceled), amended Claim 9 to include the subject matter of Claim 10 (now canceled) and has amended Claim 16. Applicant expressly reserves the right to further prosecute the original version of Claims 1-17 through continuation practice.

Buckland et al., teaches an automotive engine that is configured to adjust fuel injection to control engine speed and or fluctuations in engine load. The Examiner cites to various portions of the Buckland et al. specification which refers to throttled and throttleless engines and the possibility of using variable valve timing therewith. However, Buckland et al. only discloses the use of such devices to control engine speed or load when at idle, or when operating under a *cruise control device*. For example, Buckland et. al. discloses at col. 5, lines 55-65 that "[a]s described above, the speed may be engine speed as used in idle control, for example, or vehicle speed as used in cruise control." No other scenario is described. This description is repeated through the Buckley et al. disclosure. See e.g., the Background of the Invention, and the Summary of the Invention of the Buckland et al. reference.

Appl. No. : 10/716,910
Filed : November 19, 2003

Thus, Buckland et al. fails to teach an engine that includes at least a first sensor configured to sense movements of the throttle valve and to send a first signal to the control device indicative of movements of the throttle valve, the control device being configured to determine if the engine is in a cruising mode based, at least in part, on the first signal.

In contrast, Claim 1 now recites, among other recitations, “an air induction system communicating with the combustion chamber through the intake port, the air induction system including a throttle valve arranged to regulate an amount of air, an exhaust system communicating with the combustion chamber through the exhaust port, an intake valve configured to move between an open position and a closed position of the intake port, an exhaust valve configured to move between an open position and a closed position of the exhaust port, a valve actuator configured to actuate either the intake valve or the exhaust valve, a change mechanism configured to change an actuating timing of the valve actuator at which the valve actuator actuates the intake valve or the exhaust valve, a control device configured to control the change mechanism and at least a first sensor configured to sense movement of the throttle valve and to send a first signal to the control device indicative of movement of the throttle valve, the control device being configured to determine if the engine is in a cruising mode based, at least in part, on the first signal and to control the change mechanism to advance or retard the timing of the valve actuator to reduce engine speed fluctuations when the engine is in a cruising mode.”

Similarly, Claim 9 now recites, among other recitations, “[a] method for controlling an internal combustion engine including intake and exhaust valves, a valve actuator configured to actuate the intake and exhaust valves, and a change mechanism configured to change an actuating timing of the valve actuator at which the valve actuator actuates at least one of the intake valve and the exhaust valve, the method comprising sensing an operational condition of the engine, determining if a throttle valve is being operated, determining whether the engine is operating in a cruising state based on operations of the throttle valve, determining an engine speed of the engine, determining if the engine speed is fluctuating beyond a predetermined value, and adjusting the actuating timing of the valve actuator to reduce the engine speed fluctuations.”

Likewise, Claim 16 now recites, among other recitations, “[a] marine propulsion system comprising an internal combustion engine comprising an engine body, a combustion chamber having at least one valve seat, an induction system configured to

Appl. No. : 10/716,910
Filed : November 19, 2003

guide air into the combustion chamber through the valve seat, a valve configured to move between an open position and a closed position of the valve seat, a user-controllable throttle valve configured to meter air flowing through the induction system, the throttle valve being disposed upstream of the valve, a valve actuator configured to actuate the valve, a variable valve timing mechanism configured to change an actuating timing of the valve actuator at which the valve actuator actuates the valve, and means for reducing fluctuations in a speed of the engine while the engine is in a cruising mode by adjusting the actuating timing of the valve actuator and means for determining if the propulsion system is in a cruising mode based on movements of the throttle valve.”

This distinction is important because, the engines and propulsion systems recited in these claims can react and provide engine output adjustments to compensate for load fluctuations without relying on the operator to manually indicate whether the associated watercraft is in a “cruise control mode.” Rather, the engines and marine propulsion systems recited in these claims can identify the cruising mode based on movements of the throttle valve, then use variable valve timing to compensate for load variations. In the marine arts, normal load variations are far greater in magnitude and severity as compared to the normal load variations for road-going automobiles. For example, as noted in the background section of the present application:

However, during cruising, the outboard motor may experience significant load fluctuations. Such fluctuations may be caused by weather conditions (e.g., changing wind direction, wind volume, wave height and wave direction). These load fluctuations can be greater than the load fluctuations encountered by land vehicles during cruising operations. Another cause of load fluctuations in outboard motors is wave riding. During wave riding, the engine speed drops as the watercraft rides onto a wave and then increases as the watercraft rides over the wave.

Paragraph No. [0004] of the present application.

As noted in the Summary of the Invention of the present application, “[i]n at least one of the embodiments disclosed herein, a variable valve timing system is used to adjust a power output of an engine so as to compensate for load fluctuations. As such, an operator of such a watercraft, or other vehicle, can enjoy a more comfortable ride with less manual throttle lever manipulation.”

As noted above, Buckland et al. fails to teach any system that can determine if a marine propulsion system is in a cruising mode based on movements of a throttle valve,

Appl. No. : **10/716,910**
Filed : **November 19, 2003**

and to use variable valve timing to compensate for load fluctuations. Thus, Applicant submits that Claims 1, 9, and 16 clearly and non-obviously define over the prior art.

Additionally, Applicant submits that Claims 7, 8, 14, 15, and 17 also define over the Buckland et al. reference, not only because they depend from one of Claims 1, 9, or 16, but also on their own merit.

Mizano et al. Does Not Anticipate Claims 1, 7, 9, 14, and 16

Claims 1, 2, 7-10, and 14-17 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,554,091 issued to Mizano et al. Applicant respectfully traverses the present rejection. However, in order to expedite prosecution of the present application, Applicant has amended Claim 1 to include the subject matter of Claim 2 (now canceled), amended Claim 9 to include the subject matter of Claim 10 (now canceled) and has amended Claim 16. Applicant expressly reserves the right to further prosecute the original version of Claims 1-17 through continuation practice.

Firstly, with respect to the rejections of Claims 1 and 9, these rejections are moot due to the incorporation of Claims 2 and 10 into Claims 1 and 9, respectively.

With respect to the rejection of Claim 16, Mizano et al. has similar teaching to that of Buckland et al., discussed above. Similarly to Buckland et al., Mizano et al. also fails to teach a marine propulsion system, or any engine for that matter, that can determine if the engine is in a cruising mode based on movements of a throttle valve.

In contrast, as noted above, Claim 16 now recites, “[a] marine propulsion system comprising an internal combustion engine comprising an engine body, a combustion chamber having at least one valve seat, an induction system configured to guide air into the combustion chamber through the valve seat, a valve configured to move between an open position and a closed position of the valve seat, a user-controllable throttle valve configured to meter air flowing through the induction system, the throttle valve being disposed upstream of the valve, a valve actuator configured to actuate the valve, a variable valve timing mechanism configured to change an actuating timing of the valve actuator at which the valve actuator actuates the valve, and means for reducing fluctuations in a speed of the engine while the engine is in a cruising mode by adjusting the actuating timing of the valve actuator and means for determining if the propulsion system is in a cruising mode based on movements of the throttle valve.”

Appl. No. : 10/716,910
Filed : November 19, 2003

Thus, Applicant submits that Claim 16 clearly and non-obviously defines over the Mizano et al reference.

The Application of Buckland et al./Mizano et al. Does Not Make Obvious Claims 3-6, or 11-13

Claims 3-6 and 11-13 stand rejected under 35 U.S.C. § 103(a) as being obvious over Buckland et al. or Mizano et al. Applicant respectfully traverses the present rejection. However, as noted above, Applicant submits that Claims 1 and 9 clearly and non-obviously define over the cited references. Thus, the present rejection is moot. Applicant submits that Claims 3-6 and 11-13 define over the Buckland et al. and Mizano et al. references, not only because they depend from Claims 1 or 9, but also on their own merit. Applicant also expressly reserves the right to further prosecute the original versions of Claims 3-6 and 11-13 through continuation practice.

Response to Drawing Objection

Applicant acknowledges the Official Draftsman's objection to the drawings and, in response, has submitted formal drawings herewith.

CONCLUSION

For the foregoing reasons, it is respectfully submitted that the rejections set forth in the outstanding Office Action are inapplicable to the present claims and specification. Accordingly, early issuance of a Notice of Allowance is most earnestly solicited.

The undersigned has made a good faith effort to respond to all of the rejections in the case and to place the claims in condition for immediate allowance. Nevertheless, if any

Appl. No. : 10/716,910
Filed : November 19, 2003

undeveloped issues remain or if any issues require clarification, the Examiner is respectfully requested to call Applicant's attorney in order to resolve such issue promptly.

Respectfully submitted,

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Appl. No. : **10/716,910**
Filed : **November 19, 2003**

IN THE DRAWINGS

The attached sheets of formal drawings include changes merely to formalize the drawings and to make the drawings comply with the Notice of Draftsperson's Patent Drawing Review.

7